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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/810,858	03/26/2004	Jin-Shan Wang	82817AKNM	9107

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EXAMINER
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SHOSHO, CALLIE E

ART UNIT	PAPER NUMBER
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1714

DATE MAILED: 11/01/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/810,858

Applicant(s)

WANG ET AL.

Examiner

Callie E. Shosho

Art Unit

1714

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 07 August 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 2 and 4-9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 2 and 4-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION**

1. All outstanding rejections are overcome by applicants' amendment filed 8/7/06.

In light of the new grounds of rejection as set forth below, the following action is non-final.

**Claim Rejections - 35 USC § 103**

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. Claims 2, 6, and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sacripante et al. (U.S. 6,025,412) in view of Dvornic et al. (U.S. 2003/0069370).

Sacripante et al. disclose ink jet ink comprising water, humectant, and 2-20% dye-polymer resin comprising base resin having dye attached to the base chain as side chain component wherein the base resin includes polyamide (col.1, lines 5-10, col.3, lines 42-50, col.3, line 64-col.4, line 5, col.5, lines 59-67, col.6, lines 58 and 60-61, and col.9, lines 24-28 and 48).

The difference between Sacripante et al. and the present claimed invention is the requirement in the claims of hyperbranched polymeric dye.

Dvornic et al. disclose hyperbranched polyamide made by reacting multifunctional carboxylic acid such as succinic acid, adipic acid, terephthalic acid, etc. with multifunctional amine such as tris(2-aminoethyl)amine, triethanolamine, etc. It is further disclosed that the polymers are terminated with amine, carboxyl, or hydroxyl groups. The motivation for using such hyperbranched polymers is that they possess lower viscosity and better shear thinning

properties than linear polymers and are also less expensive to produce (paragraphs 2-3, 6, 8-9, 14, 18-19, and 30-32).

In light of the above, it therefore would have been obvious to one of ordinary skill in the art to use hyperbranched polyamide as the base resin in the dye-polymer resin of the ink jet ink of Sacripante et al. in order to produce inexpensive ink with suitable viscosity, and thereby arrive at the claimed invention.

4. Claims 2, 5, and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sacripante et al. (U.S. 6,025,412) in view of Frechet et al. (U.S. 6,300,424).

Sacripante et al. disclose ink jet ink comprising water, humectant such as glycerin or diethylene glycol, and 2-20% dye-polymer resin comprising base resin having dye attached to the base chain as side chain component wherein the base resin includes polyamide (col.1, lines 5-10, col.3, lines 42-50, col.3, line 64-col.4, line 5, col.5, lines 59-67, col.6, lines 58 and 60-61, and col.9, lines 24-28 and 48).

The difference between Sacripante et al. and the present claimed invention is the requirement in the claims of hyperbranched polymeric dye.

Frechet et al. disclose hyperbranched polyamide made by condensation polymerization of A-R-B<sub>2</sub> monomer wherein R is aromatic group and A and B are obtained from trialkylamino group, i.e. contains NH reactive group, and acid chloride such as benzoyl chloride, i.e. includes C(O)Cl reactive group. It is disclosed that such hyperbranched polyamide has lower viscosity than linear polyamide and has good thermal stability which is especially relevant to ink jet ink as disclosed by Sacripante et al. where it is important that the viscosity of the ink is low enough so

that the ink does not clog printer nozzles and where it is important that ink has good thermal stability so that ink will not degrade upon printing.

In light of the motivation for using hyperbranched polyamide disclosed by Frechet et al. as described above, it therefore would have been obvious to one of ordinary skill in the art to use such hyperbranched polyamide as the base resin in the dye-polymer resin of the ink jet ink of Sacripante et al. in order to produce ink that has high thermal stability and suitable viscosity such that the ink would not clog the printer nozzles, and thereby arrive at the claimed invention.

5. Claims 2, 4 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wang et al. (U.S. 6,252,025) in view of Frenkel et al. (U.S. 2003/0018119).

Wang et al. disclose ink jet ink comprising hyperbranched vinylic polymer having dye chromophore pendant on the polymer chain wherein the hyperbranched polymer is obtained by chain polymerization process using branching monomers which comprise chain polymerizable group and separate reactive site which is activated and initiates the polymerization. The monomers are of the AB type and comprise chain polymerizable group such as vinyl group and reactive group such as chlorine (col.1, lines 10-17 and 24, col.2, lines 49-62, col.4, lines 33-35, col.5, lines 16-24 and 32-35, col.9, line 60, and col.10, lines 30-33).

While Wang et al. broadly disclose ink jet inks, there is no disclosure that the inks comprise water and humectant as presently claimed.

Frenkel et al., which is drawn to ink jet inks, disclose that ink jet inks typically comprise water as well as humectant to prevent the tip of printer nozzle from drying out (paragraph 3).

In light of the above, it therefore would have been obvious to one of ordinary skill in the art to include water as well as well as humectant in the ink jet ink of Wang et al. in order to produce ink jet ink suitable for use in ink jet printer that does not dry out tip of printer nozzle, and thereby arrive at the claimed invention.

6. Claims 4-5 and 7-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sacripante et al. (U.S. 6,025,412) in view of Dvornic et al. (U.S. 2003/0069370).

Sacripante et al. disclose ink jet ink comprising water, humectant such as glycerin or diethylene glycol, and 2-20% dye-polymer resin comprising base resin having dye attached to the base chain as side chain component wherein the base resin includes polyamide (col.1, lines 5-10, col.3, lines 42-50, col.3, line 64-col.4, line 5, col.5, lines 59-67, col.6, lines 58 and 60-61, and col.9, lines 24-28 and 48).

The difference between Sacripante et al. and the present claimed invention is the requirement in the claims of hyperbranched polymeric dye.

Dvornic et al. disclose hyperbranched polyamide made by reacting multifunctional carboxylic acid such as succinic acid, adipic acid, terephthalic acid, etc. with multifunctional amine such as tris(2-aminoethyl)amine, triethanolamine, etc. It is further disclosed that the polymers are terminated with amine, carboxyl, or hydroxyl groups. The motivation for using such hyperbranched polymers is that they possess lower viscosity and better shear thinning properties than linear polymers and are also less expensive to produce (paragraphs 2-3, 6, 8-9, 14, 18-19, and 30-32).

Although there is no disclosure in Dvornic et al. of process for preparing the hyperbranched polyamide as presently claimed, it is noted that “[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process”, *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985) . Further, “although produced by a different process, the burden shifts to applicant to come forward with evidence establishing an unobvious difference between the claimed product and the prior art product”, *In re Marosi*, 710 F.2d 798, 802, 218 USPQ 289, 292 (Fed. Cir.1983).

Therefore, absent evidence of criticality regarding the presently claimed process for producing the hyperbranched polyamide, and given that Dvornic et al. disclose product, i.e. hyperbranched polyamide, as presently claimed, it is clear that the Dvornic et al. meets the limitations of claims 4-5 and 7-8.

In light of the motivation for using hyperbranched polyamide disclosed by Dvornic et al. as described above, it therefore would have been obvious to one of ordinary skill in the art to use hyperbranched polyamide as the base resin in the dye-polymer resin of the ink jet ink of Sacripante et al. in order to produce inexpensive ink with effective viscosity, and thereby arrive at the claimed invention.

7. Claims 4, 6, 7, and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sacripante et al. (U.S. 6,025,412) in view of Frechet et al. (U.S. 6,300,424).

Sacripante et al. disclose ink jet ink comprising water, humectant such as glycerin or diethylene glycol, and 2-20% dye-polymer resin comprising base resin having dye attached to the base chain as side chain component wherein the base resin includes polyamide (col.1, lines 5-10, col.3, lines 42-50, col.3, line 64-col.4, line 5, col.5, lines 59-67, col.6, lines 58 and 60-61, and col.9, lines 24-28 and 48).

The difference between Sacripante et al. and the present claimed invention is the requirement in the claims of hyperbranched polymeric dye.

Frechet et al. disclose hyperbranched polyamide made by condensation polymerization of A-R-B<sub>2</sub> monomer wherein R is aromatic group and A and B are obtained from trialkylamino group, i.e. contains NH reactive group, and acid chloride such as benzoyl chloride, i.e. includes C(O)Cl reactive group. It is disclosed that such hyperbranched polyamide has lower viscosity than linear polyamide and has good thermal stability (col.1, lines 13-15, col.2, line 66-col.3, line 8, and col.4, line 61-col.5, line 2) which is especially relevant to ink jet ink as disclosed by Sacripante et al. where it is important that the viscosity of the ink is low enough so that the ink does not clog printer nozzles and where it is important that ink has good thermal stability so that ink will not degrade upon printing.

Although there is no disclosure in Frechet et al. of process for preparing the hyperbranched polyamide as presently claimed, it is noted that "[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made



by a different process”, *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985) .

Further, “although produced by a different process, the burden shifts to applicant to come forward with evidence establishing an unobvious difference between the claimed product and the prior art product”, *In re Marosi*, 710 F.2d 798, 802, 218 USPQ 289, 292 (Fed. Cir.1983).

Therefore, absent evidence of criticality regarding the presently claimed process for making the hyperbranched polyamide, and given that Frechet et al. disclose product, i.e. hyperbranched polyamide, as presently claimed, it is clear that the Frechet et al. meets the limitations of claims 4, 6, 7, and 9.

In light of the motivation for using hyperbranched polyamide disclosed by Frechet et al. as described above, it therefore would have been obvious to one of ordinary skill in the art to use hyperbranched polyamide as the base resin in the polymer-dye resin of the ink jet ink of Sacripante et al. in order to produce ink that has high thermal stability and suitable viscosity such that the ink would not clog the printer nozzles, and thereby arrive at the claimed invention.

#### **Response to Arguments**

8. Applicants’ arguments filed 8/7/06 have been fully considered.

Specifically, applicants argue that Sacripante et al. is no longer a relevant reference against the present claims given that there is no disclosure of hyperbranched polymer having dye chromophore pendant on the polymer chain wherein the hyperbranched polymer is polyamide, polyether, vinylic polymer, polyimine, polysiloxane, or polyurethane as now required in all the present claims.

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It is agreed that there is no disclosure in Sacripante et al. of hyperbranched polymeric dye as now required in the present claims which is why Sacripante et al. is now used in combination with Dvornic et al. or Frechet et al. as set forth above.

Sacripante et al. disclose ink jet ink comprising water, humectant, and dye-polymer resin comprising base resin having dye attached to the base chain as side chain component wherein the base resin includes polyamide, however, there is no disclosure that the polyamide is hyperbranched polyamide. Dvornic et al. and Frechet et al. both disclosed hyperbranched polyamide as presently claimed where the motivation for using such polyamide is that they possess lower viscosity and better shear thinning properties than linear polyamides and are also less expensive to produce (Dvornic et al.) or they possess lower viscosity than linear polyamide and have good thermal stability (Frechet et al.)

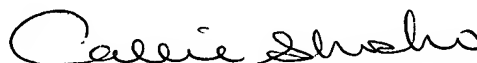
In light of the above, it is the examiner's position that it would have been obvious to one of ordinary skill in the art to use hyperbranched polyamide of Dvornic et al. or Frechet et al. as the base resin in Sacripante et al., and thereby arrive at the claimed invention.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Callie E. Shosho whose telephone number is 571-272-1123. The examiner can normally be reached on Monday-Friday (6:30-4:00) Alternate Fridays Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on 571-272-1119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Callie E. Shosho  
Primary Examiner  
Art Unit 1714

CS  
10/28/06